Helping teachers help students with pronunciation: A cognitive approach

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ABSTRACT

This article introduces a theoretical framework for understanding speech and pronunciation based on insights from cognitive phonology in which pronunciation is seen as a cognitive skill. In learning a cognitive skill, practice is essential, but its value depends on students having the right concept of what it is they are practising. Helping students form concepts appropriate to the new language is therefore a crucial part of a language teacher's role. The article starts with an informal overview of the role of concepts and concept formation in cognition. I then consider how well-known observations about pronunciation and pronunciation learning can be understood from this perspective, and suggest some principles which can account for and extend these observations. Finally, I compare the cognitive approach with more familiar mainstream views of phonology, and suggest that they are not in conflict but offer significantly and usefully different perspectives appropriate to different applications.

Introduction

In the past, pronunciation had a reputation as a subject language teachers preferred to avoid (Macdonald 2002). There was a feeling among some that the 'critical period' meant adults could not learn pronunciation, so there was no point trying to teach it, or even that it was inappropriate to criticise students' pronunciation. Others believed that teaching pronunciation required specialist knowledge of phonetics or phonology that they did not have.

Recently, however, views on pronunciation have changed. Perhaps there is a critical period after which a foreign accent is inevitable (though see Flege, Munro and Mackay 1995; Hakuta, Bialystok and Wiley 2003), but this does not prevent adults gaining proficiency in the spoken language, and most appreciate help in achieving this, even if it does sometimes involve a degree of 'criticism'. Earlier observations that pronunciation lessons did not help students (Yule and Macdonald 1994) have been superseded by evidence that, if the right methods are used, teachers can indeed help students improve their pronunciation (Derwing, Munro and Wiebe 1998; Couper 2003).

While some teachers may know intuitively or learn through experience how to teach pronunciation, most nevertheless need some training in how to do this successfully. Indeed, it may be that some teachers have avoided teaching pronunciation because they lack the confidence that comes with sufficient and appropriate training. Valuable initiatives are now being taken, nationally and internationally, to ensure that teacher education covers this important area (Yates 2001). The present paper aims to contribute to these initiatives by proposing a theoretical framework, which has been found successful in professional development (Cartwright and Fraser forthcoming) and may be useful in teacher education more generally.

Teachers, understandably, prefer a practical approach. Often however the most practical approach is not one with 'no theory', since even the most practical approach may draw on an implicit theory which may be based on unexamined assumptions. On this view, the key to practicality is not 'no theory' but the 'right theory' for the task. This need not be overly abstract or technical, but should provide a framework of explicit assumptions within which to understand the task students face in learning pronunciation and the help teachers can offer.

Until recently the theoretical frameworks available to help us understand pronunciation actually varied very little. Mainstream (structural-generative) theories, based on an analogy between human cognition and computer processing, have little relevance for human applications such as pronunciation teaching (Roach 1991), and developed in a climate which engendered a gulf between theory and practice. Recently, the idea that human cognition (a cover term for any kind of mental activity) is fundamentally different from computer processing has started to gain ascendancy (Pink 2005) and, with it, non-computational alternatives to mainstream phonology. Cognitive phonology (Langacker 1987; Taylor 2002), with its focus on concepts and concept formation, offers a theoretical framework that reduces the divide between phonological theory and human applications (Fraser in press – a; Fraser in press – b).

In this article I present an informal introduction to cognitive theory, and show how this can be used to frame an understanding of pronunciation and pronunciation learning. Next I consider how this framework can account for what makes successful pronunciation teaching successful, and how it can be used in teacher education. Finally I compare the cognitive framework to more familiar mainstream approaches.

The cognitive framework

WHY DOES SECOND LANGUAGE PRONUNCIATION SEEM SO HARD?

At first glance, it looks as though learning second language pronunciation should be easy: a simple matter of imitating the pronunciation of native speakers. In practice, of course, the reality is quite different. Second language learners generally find it very difficult to pronounce the new language, even when directly repeating a native speaker's model. A natural reaction is to assume they are not able to produce the sounds they hear, and to show them or tell them in more detail what the sounds should be like. This can be useful in some contexts, but is often surprisingly unhelpful. It is at this point that many teachers come to doubt their ability to help, and assume that, if pronunciation can be taught at all, it requires specialist knowledge of how sounds are formed, and of rules of sound combination, to explain pronunciation to students.

Another reaction is to recognise that learners' difficulty with imitation shows, not that they can't produce the sounds, but that imitation is actually a more complex process than it seems. On this view, native speakers find repeating after a model easy, not because it is simple, but because they have become so skilled at it that they no longer notice its complexity, in much the same way as the complex skill of driving a car seems easy to someone who has done it for 20 years.

When we repeat what someone says, we are not acting like a tape recorder. Repeating a sentence in a known language and repeating a sentence in an unknown language are equally easy tasks for a tape recorder, but for a person the former is very easy, while the latter is very difficult. The reason is that, in imitation, sound does not simply pass from the ear to the mouth. There is an intermediate step: the sound is heard, subconsciously broken down or processed, and then recreated. According to the cognitive approach, this breaking down and recreation involves the application of concepts. It is failure to recognise the role of concepts that makes the task of learning pronunciation seem so hard, and therefore understanding the role of concepts is the key to helping with pronunciation. Before going on, then, it will be useful to consider a little general background on the role of concepts in cognition.

CONCEPTS AND THEIR ROLE IN COGNITION

The term *concept* is used in cognitive theory with very much the same meaning as it has in everyday language. To have a concept of something is to have an idea of it, or a way of thinking about it.

Concepts are vitally important to all aspects of cognition (Murphy

2002). Reality itself is overloaded with complex information, far more than we can take in and process. Concepts enable us to focus on those aspects of reality that are relevant to us in a particular context and at a particular time, and to ignore the irrelevant aspects. Having a concept of something allows you to hold the experience of it in your mind after it is over, to go beyond the immediate experience, to understand its significance and to make predictions about it. Consider, for example, the concept of *chair*. Without this concept, you can see a chair, and bump into it, but you don't know what it is, or what it is for, what it has in common with all other chairs and how it differs from non-chairs. Having the concept, on the other hand, allows us to know there is a fourth leg even when we can see only three, and that it will bear our weight if we sit on it.

There are many possible concepts for any one aspect of reality. In any one context or situation, however, one of these ways emerges naturally and obviously, and we generally do not notice any other possibilities. It is only when we stop and reflect on our experiences in different contexts that we become aware that it might be possible to conceptualise the same reality differently. One area where this type of reflection can make us especially aware of different concepts is intercultural communication (for example, 'They have a different concept of respect in their culture').

Perhaps the most important thing about concepts is that concepts, not reality, drive our behaviour (in the sense of 'what we do', not in the sense of stimulus-response behaviourism). For example, a person who has a concept of dog as a farm animal behaves very differently towards dogs than one who thinks of a dog as a family member. We know a great deal about this general role for concepts, and refer to it often in everyday explanations of people's behaviour (for example, 'He has no concept of the value of money'). An interesting thing about concepts, however, is that though they affect us so much, we cannot observe them directly. Concepts are like a pair of glasses: we look through them rather than at them, and that makes it difficult to be sure we are describing concepts accurately.

Because we usually refer to concepts with words, it can be easy to confuse concepts with words, and the two are closely related. Words can affect concepts, and thus behaviour. For example, the choice of the word *foetus* as opposed to *unborn baby* can affect our concept of what is referred to, and thus our attitudes and behaviour towards it (Elgin 1999). Nevertheless, it is important to be clear that the concept is not the word but the meaning of the word – and not its dictionary definition but its actual meaning in context.

Learning the meaning of words, then, involves learning concepts (Bloom

2002). Concepts relate not just to one thing but to a whole category of things that are the same in some ways but different in others. Consider the concept *blue* for example. Not all blues are the same, and in learning our language, we have to learn the category of colours that falls under its particular concept of *blue*. The blue of one language can be quite different from the *blue* of another.

Cognitive theory emphasises the role of contrast in learning concepts. Concepts are not learned through positive examples alone, but negative examples (that is, examples of things that do not fall into that concept) are also needed. For example to learn the concept *blue*, it is not enough just to see examples of blue things, you must also be able to contrast these with examples of not-blue things (Wittgenstein 1974).

Our tendency to confuse words and concepts can cause misanalysis by allowing words to mask or hide the concepts behind them. This is well known in cognitive behaviour therapy, which notes that the words a person uses can mask the concepts that actually drive their behaviour so that, for example, a person can describe themselves as *sad* when really they are angry, or vice versa. Avoiding this kind of mismatch between concepts, words and reality is crucial in scientific theories. For example, when scientists started to speak of light as a wave rather than a substance, a major breakthrough in physics became possible (Lakoff and Johnson 1980).

All this may not seem to have much to do with pronunciation. The next section clarifies the role of concepts in the learning of pronunciation viewed in a cognitive framework.

CONCEPTS AND PRONUNCIATION

The key insight is that pronunciation is a form of behaviour, which, like all behaviour, is driven by concepts – in this case, concepts of speech. Of course, as with most concepts, we are not generally aware of our concepts of speech. It can help raise awareness to consider the crow of a rooster. Our concept of the crow is 'cock-a-doodle-doo' (or the equivalent in another language). The sound of the crow in itself is quite different. It is the same with speaking. Our concept of speech is a string of words, such as 'Could you pass the salt, please?'. The sound in itself is very different.

Speech in itself is a continuous stream of complex, rapidly varying sound. When we listen to speech, however, we hear it as a sequence of discrete, meaningful words, each one made up of a sequence of 'sublexical' units, such as syllables and phonemes (individual units of sound). What makes the difference between the reality and how we hear it is our concepts of speech. As well as influencing our perception of speech, these concepts also drive our pronunciation behaviour.

What are these concepts? They are the ideas in our heads about what sorts of sounds can be words, and what sorts of smaller sounds words can be made up of. These concepts form the 'pair of glasses' through which we view speech, causing us to hear speech as words, phonemes and syllables without even noticing that it is really a continuous stream of sound.

As with most concepts, we are generally unaware of our concepts of speech, and think that the way we hear speech is the way it really is. In order to become aware of the concepts that drive our pronunciation behaviour, we have to develop an 'ear' for what speech is like in itself (the 'rooster crow' of speech) and its openness to being conceptualised in ways other than the one that seems natural or obvious to us in a particular context. Studying hearing errors (hearing 'pullet surprise' instead of 'Pulitzer Prize') and 'mondegreens' (hearing a song lyric as 'Midnight and we are wasted' instead of 'Midnight at the oasis') is fun, but can also be very useful in giving a sense of how sounds that we think are separate are really blended together (Bond 1999; Fraser 2003). Drawing on decades of phonological research, we can gain understanding of the segmental concepts (phonemes) and suprasegmental concepts (rhythm and intonation) that form the phonological system of a speaker's language, dialect or idiolect (personal way of speaking).

One common problem in understanding the concepts of speech is that our everyday phonological metalanguage (the terms we use to refer to speech) offers a very poor indication of our concepts of speech. As we saw above, words often mask the concepts behind them. In the case of speech, our metalanguage is greatly influenced by our knowledge of alphabetic writing (Linell 1988; Olson 1994), and this is the reason why so many people without training in linguistics have a false belief that spelling indicates the actual sounds in words. For example, speakers of Australian English often think they say an /r/ at the end of 'car' because it is there in the spelling, even though it was lost in pronunciation hundreds of years ago.

However the influence of alphabetic literacy goes much further than this. It is not difficult to learn a transcription system that represents the phonemes far better than spelling. These phonemes are concepts of speech, not reality (Laver 1994). Like all concepts, each concept of speech embraces a category of sounds. The concept of the phoneme p, for example, does not refer to one sound (though until we study phonology we feel it does) but to a category of sounds that are all slightly different (the 'allophones' of /p/). The phonological concepts of each language refer to different categories of sounds, and have to be learned through experiences that contrast each one with all the others.

So are phonemes the concepts that actually drive our pronunciation behaviour? They are certainly relevant, but studies such as those of hearing

errors and mondegreens, mentioned above, suggest that the concepts of syllable, stress, rhythm and intonation (the 'suprasegmentals') are at least as important as phonemes in pronunciation. However, because these are not usually represented in either writing or phonemic transcription, it is more difficult for us to be aware of them, and of how they actually operate in pronunciation. In learning about suprasegmentals, it is important to recall that these, too, are concepts, not reality. The concept of stress, for example, does not refer to just one way of saying a syllable (though, again, we tend to feel it does) but to a whole category of somewhat different ways; and that category varies greatly from language to language.

The concepts that drive speech behaviour come, of course, from our learning of our language. People from different language backgrounds have very different concepts of the sounds of speech. That is why their speech behaviour is also very different. The differences in their behaviour (their 'foreign accent') allow an observer to make educated guesses about their phonological concepts, without necessarily knowing the phonology of their language. This is a very useful skill that many teachers develop through experience, but also one that can be taught quite easily within the cognitive framework.

Of course, people from other language backgrounds don't notice their concepts any more than we notice ours. We all tend to think, until we are invited to reflect upon it, that the way we conceptualise speech is the way it is. Understanding someone else's concepts of speech is rather like understanding different cultural concepts, but with the crucial difference that, whereas we expect people from different cultures to have different cultural concepts, most people have little sense that concepts of speech can vary from one person to another.

When we go to learn a new language, we naturally apply our existing concepts of speech to it, whether these are the concepts that we have always used for our own language, or some concepts of 'foreign speech' (Flege 1995). We don't notice we are doing this any more than we notice that we are applying concepts in our native language; it happens subconsciously. The problem, of course, is that these concepts are not fully appropriate to the new language, and so they drive pronunciation that sounds 'foreign' to listeners and feels awkward to the speaker. What we need to do is to change our concepts to fit the new language, and let the new concepts drive our pronunciation. We can hypothesise that those students who 'pick up language naturally' are able to do so because they realise – whether through exposure to a range of different languages (Ellis 2002) or through some natural 'gift' – that the task is a conceptual one. This gives the key to

helping students who don't have that gift to facilitate their formation of new concepts. Like all conceptual learning, this can be challenging and can take time. That is why imitating the pronunciation of a second language is hard: the concepts are not yet fully in place.

The above is far too brief to do justice to the background theory of cognitive phonology, but perhaps gives a flavour of its main concerns sufficient to let us move on now to this question: how can these ideas be operationalised to provide a framework for understanding pronunciation and pronunciation teaching? The next section briefly addresses this question. The close link between theory and application will be evident as we consider how this framework can account for practices that are known to be effective in teaching pronunciation and how we can use the account to extend those practices in useful ways.

CHANGING PRONUNCIATION BY CHANGING CONCEPTS

If pronunciation is behaviour, and behaviour is driven by concepts, then the key to changing pronunciation is changing concepts. Of course, pronunciation involves more than just mental activity: it is a physical skill, which requires practice. According to the cognitive approach, though, the conceptual aspect is crucial to making practice effective. On this view, learning pronunciation in adulthood is more difficult than in childhood, not for any physical reason, but simply because changing existing concepts is more difficult than forming new ones.

Fortunately, a lot is known about concept formation in adult education (Williams and Burden 1997). Teachers are generally skilled in helping students learn new concepts using principles such as those that say concepts to be learned should be contextualised in a way that makes them relevant to students, and new concepts are best learned in an atmosphere of encouragement and optimism. One very important principle is captured by the adage, 'When I hear, I forget; when I see, I remember; when I do, I understand', since concept formation requires active engagement by the student, not just passive receipt of information. Another important principle, which can appear to conflict with the previous one, is that production often relies on prior development of perception – in other words, students need to understand how to do something before they can do it. The apparent conflict with the first principle is resolved when it is realised that perception itself, in the relevant sense, is an active, engaged process, requiring the application of concepts.

Language teachers, in particular, are generally well versed in these principles (even if they don't think of them explicitly in terms of concept

formation) through their training in Communicative Language Teaching (CLT) (Carter and Nunan 2001). However, for various reasons (Celce-Murcia, Brinton and Goodwin 1996), communicative approaches have not always been applied to pronunciation. The cognitive approach, with its focus on pronunciation in communication, can be seen as an extension of CLT principles to pronunciation, although it does have some special characteristics that require special treatment.

One of these characteristics is that many students are reluctant to practise pronunciation, for a range of reasons, and need help from teachers to overcome this. Practising in class, though useful, is not nearly as important as practising outside (Elder and O'Loughlin 2003). Successful teachers generally encourage and support students with classroom practice of pronunciation that the students will actually use in real situations, explicitly anticipating what problems might occur and setting up opportunities for success.

With sufficient real-life practice, some students will learn pronunciation naturally. However, without further guidance, many will not, as shown by the many people who use a language for decades but still have very poor pronunciation. According to cognitive theory, this happens because, though they are practising, they are not thinking about what they are doing in the right way. It is relatively easy for students to understand the tasks involved in learning new vocabulary, or new ways of arranging words in sentences, or even new cultural attitudes to the use of language. With pronunciation, however, it is hard for them to understand how their learning works. They often focus on what is going on inside their mouths. While attention to articulation can be useful in some contexts, if overdone it can make students tongue-tied, focusing their attention away from the concepts that actually drive their pronunciation and leading to a dispiriting sense of 'I can't make the right sounds'. This is particularly unfortunate when, as is often the case, they are actually able to make the sound in question. Many students, for example, can easily make 'difficult' sounds like 'r' and 'l', 's' and 'sh' in some contexts. Their problem is not with articulation, but with controlling the distinction between the sounds. This is a conceptual problem. Rather than giving them the articulatory information they request, it can help students if teachers point out to them when they are making the sounds and help them form new concepts of what they are doing.

To take just one example, very briefly, consider the case of word stress. Virtually all students can physically produce stressed syllables. Most students can also sit down and learn a set of rules of stress placement for English. These skills, however, are not enough for them to be able to control their use of stress in a way appropriate to English – a crucial element in intelligibility. The reason is that the knowledge they have gained does not

reach the level of the concepts that drive their pronunciation. To reach that level, they need to work on hearing and producing the contrast between stress and non-stress as it operates in English (which, of course, is very different to how it operates in other languages). More detailed suggestions on the practicalities of concept formation in teaching stress and other aspects of pronunciation are given in Fraser (2001).

The key role for practice, then, is to activate new concepts relevant to the new language. Practice involves repetition, which, as noted above, is more difficult than is often realised. This is because unnoticed concepts from the first language get in the way. Therefore, for repetition to be effective, it must be done in a way that encourages students to ignore existing concepts by, for example, inviting students to 'let your ears do the work'. In this way, listen-and-repeat practice can be extremely helpful, and is usually far less boring than teachers might fear, precisely because students are using the practice to actively learn new concepts at a subconscious level. It has even been claimed that repetition is all that is needed for successful acquisition of pronunciation (Kjellin 1999). The cognitive approach, however, emphasises the need to go beyond simply repeating a model to practising spontaneous speech.

The key to success with practice of spontaneous speech is for the teacher to provide useful feedback on errors as they occur, followed by thorough practice – much like a coach provides for a student of sport or dance. As coaches know, the difficulty is to find exactly the right feedback to help students think about what they are doing in a way that can affect their behaviour. Learners' errors come from their concepts. To be effective in helping with pronunciation, whatever guidance is offered must influence the level of concepts. This is not easy, since, as we have seen, students' concepts are not only firmly entrenched, but invisible to them.

Simply telling students about their pronunciation errors is not likely to be useful, no matter how accurate the information. Speech is fleeting and so people cannot focus on their own pronunciation as they are speaking. Recalling the speech of even a few moments ago requires the application of concepts – which, by definition, students are likely to do in a way inappropriate to the language they are learning. Add to this that many students have limited vocabulary and grammar to understand abstract explanations of pronunciation. For these reasons it is important to allow students to hear examples of pronunciation several times, and to use visual representations as well as verbal explanations.

The crucial question, then, becomes what should those visual representations and verbal explanations be like? The important thing is to go beyond what helps particular students in particular contexts, and to establish general principles that can be passed on to new teachers and be adapted to the needs and constraints of any teaching situation. The next section considers how to help teachers learn such principles for use in their pronunciation teaching.

What do teachers need to know?

Teachers who want to learn about pronunciation come with a range of prior experiences of learning and teaching pronunciation. Some undertake professional development in mid-career, while others are starting out in teacher education programs, and yet others want some brief guidelines to deal with specific issues in workplace communication. Teachers also have varying levels of interest in pronunciation. Some simply want to be able to help with problems as they arise. Some are very interested in teaching pronunciation, but have little interest in theory and research. Some aim to contribute to the theory of pronunciation teaching through their own research and some, of course, migrate from one level to another at different times in their careers.

The cognitive framework can be presented with a level of detail and technicality appropriate to any of these situations. The important thing is to present the overall framework, in general terms, right from the start, and allow detail to be filled in as needed. This hermeneutic process helps teachers to overcome their natural misconceptions about speech, and to understand why students speak the way they do, and what sort of help they need, so that they can design lessons and judge the effectiveness of learning materials. The aim is that no teacher should be baffled or discouraged by students' pronunciation difficulties, and all should have the basic knowledge to avoid practices that inadvertently baffle or discourage their students. Beyond this there is really no limit to the level of detail that can be added by interested teachers.

A basic cognitive framework like the one given above, emphasising the role of concepts, can generally be introduced quite easily to teachers. Many aspects are known from CLT, and the overall idea that concepts mediate perception and affect behaviour is usually familiar as background knowledge. What is not so familiar is the idea of treating pronunciation in this framework. However, most teachers find it easy to reframe their prior experiences in these terms, due to their understanding of CLT.

With the framework in place, the most important thing teachers need to know about pronunciation is that speech is not like we think it is, and this can be readily taught through demonstrations designed to undermine confidence in the reality of phonemes. It is also very useful to give some understanding of the basics of speech perception, especially the importance of suprasegmentals. It is not necessary to go into technical phonetics, or rules of segmental or suprasegmental phonology, though, of course, this can be done later if relevant to teachers' interests. At this stage it is more important that they gain a clear and solid idea of the distinction between phonetics (the reality of speech) and phonology (how we think about speech), and of the concepts behind basic metalinguistic terms like syllable, stress, phoneme, linking and so on.

With this small amount of background, teachers are ready to learn some basic principles and strategies for successful pronunciation teaching. Such principles, adapted to their level of expertise and experience, allow them to start applying the cognitive theory in their classroom practice straightaway. Of course, the exact principles to teach teachers are not set in concrete, but some suggestions can be made, which might form a useful starting point.

One principle emphasises the value of helping students think about pronunciation as communication, and of their practice in class as rehearsal for what they will do in real situations. Helping students focus on communicating with a listener not only helps reduce self-consciousness, but can also lead to a useful non-technical discussion of the importance to English listeners of syllable structure and word and sentence stress. We have seen that it is really important for teachers to ensure that students fully understand the concept of stress, for example, as opposed to simply knowing the word 'stress'. Without this, they can develop a mismatch between word and concept, and learn to recite rules for stress placement, using pronunciation that violates the very rules they are reciting.

Another principle emphasises the critical role of contrast in helping students understand the concepts that are relevant to the new language. Contrast, of course, has always been part of pronunciation teaching through the use of minimal pairs. According to the cognitive approach, minimal pair work can be very useful in teaching pronunciation – provided, of course, that it is framed in such a way as to influence the concepts that actually drive behaviour. However, the cognitive framework allows a much wider use of the principle of contrast. The key contrast for learners is not the contrast between members of a minimal pair, but the contrast between what they intended to say and what a listener understood them to say – for example, the contrast between the 'cup of tea' they asked for and the 'cappuccino' the

waiter brought. Extensive use of contrast like this can be recommended as extremely useful to students in developing their own concepts of English pronunciation. Phonological rules offered in support of learning this kind of contrast are much more useful than those taught as an abstract system – as many teachers have found.

In explaining these or other principles to teachers, it is useful to emphasise that principles and strategies for pronunciation teaching are in the early stages of development. As we have seen, practical theories of pronunciation are relatively new. Teachers should be critical of dogmatic statements about pronunciation teaching, whatever their sources, and test them against their own observations of what works with their own students. Of course, in saying this, it is important to emphasise that 'what works' is a very strict criterion. Students' general feedback that they enjoyed the lesson is not enough: they must be able to use whatever advice or information is given to actually and immediately improve their pronunciation. Of course, they will then need practice to make the change more permanent. However, practice is unlikely to be effective until they have understood what they need to do, and that understanding is shown by immediate improvement.

If teachers can gain solid evidence that particular practical techniques are successful using this stringent measure, then their findings can and should influence future theory development in cognitive phonology.

How does the cognitive approach relate to mainstream phonology?

The cognitive approach is generally congenial to teachers with experience in teaching pronunciation but with relatively little prior knowledge of phonological theory, as it offers them a non-technical way of thinking about their observations and a practical way through the many difficulties in teaching pronunciation. Those with a background in mainstream (structural-generative) phonology sometimes find cognitive theory more difficult to accept. Interestingly, issues fall into two types: some find cognitive theory too different and in conflict with established views about phonology; others find it too similar, merely offering a restatement of what they already know. By briefly considering the relationship between mainstream and cognitive theory, we can show that there is no need for conflict, but that they do offer usefully different perspectives.

Both mainstream and cognitive theories use terms such as phoneme, syllable, stress and so on. What is different is the theoretical status of these terms: in mainstream phonological theory, they are used to designate units of speech, while in cognitive theory they are used to designate concepts of

speech. The difference is subtle, but significant. Mainstream phonology is essentially a way of describing speech, whereas cognitive phonology is essentially a way of understanding the behaviour of speakers. The difference is similar to the difference between the design of maps and the design of road signs. The designers of maps have the aim of representing the road to a specified level of detail, while the designers of road signs have a very different, but equally specific aim – of affecting as directly as possible the concepts that influence drivers' behaviour. Mainstream phonology is useful in tasks analogous to the design of maps; cognitive phonology is useful in tasks analogous to the design of road signs. Clearly both perspectives have their places, and can co-exist in harmony.

Where conflict can arise is when the claim is made that the descriptions of mainstream phonology actually reside in people's heads. This claim was a key tenet of Chomskyan thought (Chomsky and Halle 1968). Because human cognition was likened to computer processing, the claim created a need for computational rules relating the description 'stored in people's heads' to the description of speech that 'comes out of their mouths'. Figuring out these complicated rules was the main task of mainstream phonology for several decades. People versed in Chomskyan theory sometimes find the cognitive approach overly simple by comparison. Of course, from the cognitive perspective, this simplicity is a virtue which comes precisely from the recognition that human cognition is not about computational rules but about concepts and concept formation. It is interesting to note that mainstream views have diverged from strict Chomskyan views in ways that move it closer to cognitive theory (Gussenhoven and Jacobs 1998; Berko Gleason 2005), though still maintaining an essentially computational view of human cognition (Fraser 1997).

To make the distinction more concrete, let us consider very briefly the case of 'transfer'. In mainstream theory, a foreign accent is understood as 'transfer' from the phonology of the first language to that of the new language, and the emphasis is on figuring out the complex rules that relate a learner's accent and a native speaker's. The cognitive view of transfer is that what is transferred is not sounds, or rules, but habits of conceptualisation. This is not only simpler, but offers a better basis for understanding and helping with the problems people have in learning second language pronunciation.

What of the view that the cognitive framework simply restates what teachers already do? It has been recognised for some time that structural-generative theory is too abstract and complex for teacher education (Roach 1991). However, with few genuinely alternative approaches, teacher

education has usually drawn on a simplified mainstream theory which, if taught, as it often is, with insight and sensitivity and a strong emphasis on the principles of CLT, can be useful and result in practices that are indeed similar to those of the cognitive approach. Use of simplified mainstream theory has the drawback, however, of maintaining the gulf between phonological theory and practice. The theory remains focused on describing learners' speech rather than their behaviour, and teachers wanting to contribute to theory gain little from their classroom practice.

The value of the cognitive framework is that it has been developed from close observation of 'what works' in teaching and other practical tasks. Its theory arises from understanding of human cognition (as opposed to computation), allowing teachers to extend and improve their classroom practices, and its hermeneutic method encourages a close link between theory and practice, allowing teachers and researchers to cooperate more closely.

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REFERENCES

Berko Gleason, J. (2005). *The development of language* (6th ed.). Boston: Pearson Education.

Bloom, P. (2002). *How children learn the meanings of words*. Cambridge, Mass.: MIT Press.

Bond, Z. (1999). *Slips of the ear*. Academic Press: London.

Carter, R., & Nunan, D. (Eds.). (2001). *The Cambridge guide to teaching English to speakers of other languages*. Cambridge: Cambridge University Press.

Cartwright, R., & Fraser, H. (forthcoming). *Let your ears do the work! A coursebook for teachers of second language pronunciation*.

Celce-Murcia, M., Brinton, D., & Goodwin, J. (1996). *Teaching pronunciation: A reference for teachers of English to speakers of other language*s. Cambridge: Cambridge University Press.

Chomsky, N., & Halle, M. (1968). *The sound pattern of English*. New York: Harper and Row.

Couper, G. (2003). The value of an explicit pronunciation syllabus in ESOL teaching. *Prospect*, 18(3), 53–70.

Derwing, T., Munro, M., & Wiebe, G. (1998). Evidence in favour of a broad

framework for pronunciation instruction. *Language Learning*, 48, 393–410.

Elder, C., & O'Loughlin, K. (2003). Investigating the relationship between intensive English language instruction and band score gain on IELTS. *IELTS Research Reports, Round 4*, 207–254.

Elgin, S. H. (1999). *The language imperative: How learning languages can enrich your life and expand your mind*. Cambridge, Mass.: Perseus.

Ellis, L. (2002). Teaching from experience: A new perspective on the non-native teacher in adult ESL. *Australian Review of Applied Linguistics*, 25, 71–107.

Flege, J. (1995). Second language speech learning: Theory, findings and problems. In W. Strange (Ed.), *Speech perception and linguistic experience* (pp. 233–272). Baltimore: York Press.

Flege, J., Munro, M., & Mackay, I. (1995). Factors affecting degree of perceived foreign accent in a second language. *Journal of the Acoustical Society of America*, 97, 3125–3134.

Fraser, H. (1997). Phonology without tiers: Why the phonetic representation is not derived from the phonological representation. *Language Sciences*, 19, 101–137.

Fraser, H. (2001). *Teaching pronunciation: A handbook for teachers and trainers*. Sydney: TAFE NSW Access Division.

Fraser, H. (2003). Issues in transcription: Factors affecting the reliability of transcripts as evidence in legal cases. *Forensic Linguistics*, 10, 203–226.

Fraser, H. (in press – a). Categories and concepts in phonology: Theory and practice. In A. Schalley & D. Khlentzos (Eds.), *Proceedings of the international language and cognition conferenc*e. Amsterdam: John Benjamins.

Fraser, H. (in press – b). Phonological concepts and concept formation. In G. Nathan & J. Mompean (Eds.), *Phonology theme session, international cognitive linguistics conference*, Seoul. Amsterdam: John Benjamins.

Gussenhoven, C., & Jacobs, H. (1998). Understanding phonology. London: Arnold.

Hakuta, K., Bialystok, E., & Wiley, E. (2003). Critical evidence: A test of the critical period hypothesis for second language acquisition. *Psychological Science*, 14, 31–38.

Kjellin, O. (1999). Accent addition: Prosody and perception facilitates second language learning. In O. Fujimura, B. Joseph & B. Palek (Eds.), *Proceedings of LP'98 (Linguistics and Phonetics conference) at Ohio State University, Columbus, Ohio, September 1998*. (Vol. 2, pp. 373–398). Prague: The Karolinum Press.

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.

Langacker, R. (1987). *Foundations of cognitive grammar*. Stanford, Calif.: Stanford University Press.

Laver, J. (1994). *Principles of phonetics*. Cambridge: Cambridge University Press.

Linell, P. (1988). The impact of literacy on the conception of language: The case of linguistics. In R. Saljo (Ed.), *The written world: Studies in literate thought and action* (pp. 41–58). Berlin: Springer-Verlag.

Macdonald, S. (2002). Pronunciation – views and practices of reluctant teachers. *Prospect*, 17, 3, p3–15.

Murphy, G. L. (2002). *The big book of concepts*. Cambridge, Mass.: MIT (Bradford).

Olson, D. (1994). *The world on paper: The conceptual and cognitive implications of writing and reading*. Cambridge: Cambridge University Press.

Pink, D. H. (2005). *A whole new mind: Moving from the information age to the conceptual age*. Sydney: Allen and Unwin.

Roach, P. (1991). *English phonetics and phonology: A practical course* (2nd ed.). Cambridge: Cambridge University Press.

Taylor, J. R. (2002). *Cognitive grammar*. Oxford: Oxford University Press.

Williams, M., & Burden, R. L. (1997). *Psychology for language teachers: A social constructivist approach*. Cambridge: Cambridge University Press.

Wittgenstein, L. (1974). *Philosophical investigations*. Oxford: Basil Blackwell.

Yates, L. (2001). *Teaching pronunciation in the AMEP: Current practice and professional development*. Sydney: NCELTR (AMEP research paper).

Yule, G., & Macdonald, D. (1994). The effects of pronunciation teaching. In J. Morley (Ed.), *Pronunciation pedagogy and theory: New views, new directions* (pp. 109–118). Alexandria, Va.: TESOL Inc.